Estuaries and Coasts

Volume 32 January 2009 Number 1

Contents

THE H.T. ODUM SYNTHESIS ESSAY

1 Reforming Watershed Restoration: Science in Need of Application and Applications in Need of Science. MARGARET A. PALMER

PERSPECTIVE

18 Historical Land Use, Nitrogen, and Coastal Eutrophication: A Paleoecological Perspective. GRACE S. BRUSH

ORIGINAL PAPERS

29 Return to *Neverland*: Shifting Baselines Affect Eutrophication Restoration Targets. CARLOS M. DUARTE, DANIEL J. CONLEY, JACOB CARSTENSEN, AND MARÍA SÁNCHEZ-CAMACHO

37 A Simulation of Historic Hydrology and Salinity in Everglades National Park: Coupling Paleoecologic Assemblage Data with Regression Models. FRANK E. MARSHALL III, G. LYNN WINGARD, AND PATRICK PITTS

54 Residual Exchange Flows in Subtropical Estuaries. ARNOLDO VALLE-LEVINSON, GUILLERMO GUTIERREZ DE VELASCO, ARMANDO TRASVIÑA, ALEJANDRO J. SOUZA, REGINALDO DURAZO, AND ASHISH J. MEHTA

68 Comparison of the Salinity Structure of the Chesapeake Bay, the Delaware Bay and Long Island Sound Using a Linearly Tapered Advection-Dispersion Model. PETER GAY AND JAMES O'DONNELL

88 Effect of Wind and Rainfall on Water Exchange in a Stratified Estuary. JIN-HEE YUK AND SHIN-ICHI AOKI

100 Thermal Variability in a Tidal River. STEPHEN G. MONISMITH, JAMES L. HENCH, DEREK A. FONG, NICHOLAS J. NIDZIEKO, WILLIAM E. FLEENOR, LAURA P. DOYLE, AND S. GEOFFREY SCHLADOW

111 Net Ecosystem Metabolism and Nonconservative Fluxes of Organic Matter in a Tropical Mangrove Estuary, Piauí River (NE of Brazil). MARCELO F. L. SOUZA, VIVIANE R. GOMES, SIMONE S. FREITAS, REGINA C. B. ANDRADE, AND BASTIAAN KNOPPERS

123 Temporal and Spatial Dynamics of Diel-Cycling Hypoxia in Estuarine Tributaries. ROBIN M. TYLER, DAMIAN C. BRADY, AND TIMOTHY E. TARGETT

146 Effects of the Herbicide Diuron on Cordgrass (*Spartina foliosa*) Reflectance and Photosynthetic Parameters. SUSAN L. WILLIAMS, ALBERT CARRANZA, JENNIFER KUNZELMAN, SEEMA DATTA, AND KATHRYN M. KUIVILA

158 Delivery of Trace Metals (Al, Fe, Mn, V, Co, Ni, Cu, Cd, Ag, Pb) from the Trinity River Watershed Towards the Ocean. KENT W. WARNKEN AND PETER H. SANTSCHI

173 Influence from Hydrological Modification on Energy and Nutrient Transference in a Deltaic Food Web. MARGENE E. GOECKER, JOHN F. VALENTINE, SUSAN A. SKLENAR, AND GLENN I. CHAPLIN

188 Phosphorus Availability and Salinity Control Productivity and Demography of the Seagrass *Thalassia testudinum* in Florida Bay. DARRELL A. HERBERT AND JAMES W. FOURQUREAN

NOTE

202 Subtidal Eelgrass Declines in the Great Bay Estuary, New Hampshire and Maine, USA. NORA T. BEEM AND FREDERICK T. SHORT

TECHNICAL COMMUNICATIONS

206 Positive Relationship between Freshwater Inflow and Oyster Abundance in Galveston Bay, Texas DAVID BUZAN, WEN LEE, JAN CULBERTSON, NATHAN KUHN, AND LANCE ROBINSON

213 Comments on Buzan et al. "Positive Relationships between Freshwater Inflow and Oyster Abundance in Galveston Bay, Texas". R. EUGENE TURNER

Estuaries and Coasts

Volume 32 March 2009 Number 2

Contents

ORIGINAL PAPERS

219 Coupling Between the Coastal Ocean and Yaquina Bay, Oregon: Importance of Oceanic Inputs Relative to Other Nitrogen Sources. CHERYL A. BROWN AND ROBERT J. OZRETICH

238 Anammox in Tidal Marsh Sediments: The Role of Salinity, Nitrogen Loading, and Marsh Vegetation. Ketil Koop-Jakobsen and Anne E. Giblin

246 Seasonal Variability of Carbon Dioxide in the Rivers and Lagoons of Ivory Coast (West Africa). Y. J. M. KONÉ, G. ABRIL, K. N. KOUADIO, B. DELILLE, AND A. V. BORGES

261 The Effects of Tidal Export from Salt Marsh Ditches on Estuarine Water Quality and Plankton Communities. FLORIAN KOCH AND CHRISTOPHER J. GOBLER

276 Bacterial Community Dynamics in a Seagrass (Posidonia oceanica) Meadow Sediment. MICAELA GARCÍA-MARTÍNEZ, ARANTXA LÓPEZ-LÓPEZ, MARÍA LL. CALLEJA, NÚRIA MARBÀ, AND CARLOS M. DUARTE

287 Hypoxia in Chesapeake Bay Tributaries: Worsening Effects on Macrobenthic Community Structure in the York River. WILLIAM CHRISTOPHER LONG AND ROCHELLE DIANE SEITZ

298 Differences in Prey Capture Behavior in Populations of Blue Crab (Callinectes sapidus Rathbun) from Contaminated and Clean Estuaries in New Jersey. JESSICA M. REICHMUTH, ROSS ROUDEZ, TERRY GLOVER, AND JUDITH S. WEIS

309 Ingress of Brachyuran Crab Post-larvae to the Newport River Estuary. MATTHEW B. OGBURN AND RICHARD B. FORWARD JR.

319 Macroinvertebrate Production in the Submerged Aquatic Vegetation of the Mobile–Tensaw Delta: Effects of an Exotic Species at the Base of an Estuarine Food Web. GLEN I. CHAPLIN AND JOHN F. VALENTINE

333 Abiotic and Biotic Links Work Two Ways: Effects on the Deposit at the Cliff Foot Induced by Mechanical Action of Date Mussel Harvesting (Lithophaga lithophaga). ALESSIO ROVERE, STEFANO BELLATI, VALERIANO PARRAVICINI, MARCO FIRPO, CARLA MORRI, AND CARLO NIKE BIANCHI

340 Use of Regenerated Scales and Scale Marginal Increments as Indicators of Recent Dietary History in Fish. MATTHEW P. HAMMOND AND CANDIDA SAVAGE

350 Habitat Use Patterns of Newly Settled Southern Flounder, Paralichthys lethostigma, in Aransas–Copano Bay, Texas. Suraida E. Nañez-James, Gregory W. Stunz, and Scott A. Holt

360 Estuarine and Coastal Habitat Use of Gulf Sturgeon (*Acipenser oxyrinchus desotoi*) in the North-Central Gulf of Mexico. STEPHEN T. ROSS,W. TODD SLACK, RYAN J. HEISE, MARK A. DUGO, HOWARD ROGILLIO, BRYANT R. BOWEN, PAUL MICKLE, AND RICHARD W. HEARD

375 Is the Response of Estuarine Nekton to Freshwater Flow in the San Francisco Estuary Explained by Variation in Habitat Volume?. WIM J. KIMMERER, EDWARD S. GROSS, AND MICHAEL L. MACWILLIAMS

390 Short-and Long-Term Response of Deteriorating Brackish Marshes and Open-Water Ponds to Sediment Enhancement by Thin-Layer Dredge Disposal. MEGAN K. LA PEYRE, BRYAN GOSSMAN, AND BRYAN P. PIAZZA

Estuaries and Coasts

Volume 32 May 2009 Number 3

Contents

403 Estuarine Ecosystem Response Captured Using a Synoptic Climatology. David G. Kimmel, W. David Miller, Lawrence W. Harding Jr, Edward D. Houde, and Michael R. Roman

410 Chesapeake Bay Plume Morphology and the Effects on Nutrient Dynamics and Primary Productivity in the Coastal Zone. Katherine C. Filippino, Peter W. Bernhardt, and Margaret R. Mulholland

425 Microelectrode Study of Oxygen Uptake and Organic Matter Decomposition in The Sediments of Xiamen Western Bay. Kunming Xu, Liping Zhang, and Wenbin Zou

436 Development of Productivity Models for the Northern Gulf of Mexico Based on Oxygen Concentrations and Stable Isotopes. Zoraida J. Quiñones-Rivera, Björn Wissel, and Dubravko Justic

447 Transparent Exopolymer Particles (TEP) in a River-Dominated Estuary: Spatial–Temporal Distribution and an Assessment of Controls upon TEP Formation. Michael S. Wetz, Meredith C. Robbins and Hans W. Paerl

456 Deterioration of Sediment Quality in Seagrass Meadows (Posidonia oceanica) Invaded by Macroalgae (Caulerpa sp.). Marianne Holmer, Núria Marbà, Morgane Lamote, and Carlos M. Duarte

467 Seasonal Production and Biomass of the Seagrass, Halodule wrightii Aschers. (Shoal Grass), in a Subtropical Texas Lagoon. Joseph L. Kowalski, Hudson R. DeYoe, and Terry C. Allison

483 The Functions and Values of Fringing Salt Marshes in Northern New England, USA. Pamela A. Morgan, David M. Burdick, and Frederick T. Short

496 The Impact of Hurricane Katrina on the Coastal Vegetation of the Weeks Bay Reserve, Alabama from NDVI Data. John C. Rodgers III, Adam W. Murrah, and William H. Cooke

508 Phytoplankton Functional Groups in a Tropical Estuary: Hydrological Control and Nutrient Limitation L. S. Costa, V. L. M. Huszar, and A. R. Ovalle

522 Defining Optimal Freshwater Flow for Oyster Production: Effects of Freshet Rate and Magnitude of Change and Duration on Eastern Oysters and Perkinsus marinus Infection. Megan K. La Peyre, Bryan Gossman, and Jerome F. La Peyre

535 Temporal Trends of Dissolved Trace Metals in Jamaica Bay, NY: Importance of Wastewater Input and Submarine Groundwater Discharge in an Urban Estuary. Aaron J. Beck, J. Kirk Cochran and Sergio A. Sañudo-Wilhelmy

551 Trace Metals (Cd, Cu, Hg, and Pb) Accumulation Recorded in the Intertidal Mudflat Sediments of Three Coastal Lagoons in the Gulf of California, Mexico. A. C. Ruiz-Fernández, M. Frignani, C. Hillaire-Marcel, B. Ghaleb, M. D. Arvizu, J. R. Raygoza-Viera, and F. Páez-Osuna

565 Short-Term Effects of an Oil Spill on Marsh-Edge Fishes and Decapod Crustaceans Agatha-Marie F. Roth and Donald M. Baltz

573 Transport and Dispersion of a Conservative Tracer in Coastal Waters with Large Intertidal Areas J. O. Blanton, A. J. Garrett, J. S. Bollinger, D. W. Hayes, L. D. Koffman, and J. Amft

Estuaries and Coasts

Volume 32 July 2009 Number 4

Contents

PERSPECTIVE

593 Controlling Eutrophication along the Freshwater–Marine Continuum: Dual Nutrient (N and P) Reductions are Essential. HANS W. PAERL

ORIGINAL PAPERS

602 An Idealized Model and Systematic Process Study of Oxygen Depletion in Highly Turbid Estuaries. S. A. TALKE, H. E. DE SWART, AND V. N. DE JONGE

621 Narragansett Bay Hypoxic Event Characteristics Based on Fixed-Site Monitoring Network Time Series: Intermittency, Geographic Distribution, Spatial Synchronicity, and Interannual Variability. DANIEL L. CODIGA, HEATHER E. STOFFEL, CHRISTOPHER F. DEACUTIS, SUSAN KIERNAN, AND CANDACE A. OVIATT

642 Laboratory Determination of Molybdenum Accumulation Rates as a Measure of Hypoxic Conditions. Warren S. Boothman and Laura L. Coiro

654 Whole Ecosystem Evidence of Eutrophication Enhancement by Wetland Dredging in a Shallow Tropical Lake. HUMBERTO MAROTTA, LUIZ BENTO, FRANCISCO DE A. ESTEVES, AND ALEX ENRICH-PRAST

661 Importance of CDOM Distribution and Photoreactivity in a Shallow Texas Estuary. G. CHRISTOPHER SHANK, KEVIN NELSON, AND PAUL A. MONTAGNA

678 Flocculation Potential of Estuarine Particles: The Importance of Environmental Factors and of the Spatial and Seasonal Variability of Suspended Particulate Matter. ROMARIC VERNEY, ROBERT LAFITE, AND JEAN-CLAUDE BRUN-COTTAN

694 Determining Spatial and Temporal Inputs of Freshwater, Including Submarine Groundwater Discharge, to a Subtropical Estuary Using Geochemical Tracers, Biscayne Bay, South Florida. JEREMY C. STALKER, RENÉ M. PRICE, AND PETER K. SWART

709 The Role of Kelvin Number on Bulge Formation from Estuarine Buoyant Outflows. Pablo Huq

720 Changes in Nutrient and Carbon Availability and Temperature as Factors Controlling Bacterial Growth in the Northern Baltic Sea. LAURA HOIKKALA, HANNA AARNOS, AND RISTO LIGNELL

734 Understanding Causes and Impacts of the Dinoflagellate, Cochlodinium polykrikoides, Blooms in the Chesapeake Bay. MARGARET R. MULHOLLAND, RYAN E. MORSE, GEORGE E. BONEILLO, PETER W. BERNHARDT, KATHERINE C. FILIPPINO, LEO A. PROCISE, JOSE L. BLANCO-GARCIA, HAROLD G. MARSHALL, TODD A. EGERTON, WILLIAM S. HUNLEY, KENNETH A. MOORE, DIANNA L. BERRY, AND CHRISTOPHER J. GOBLER

748 Modeling the Effects of Oyster Reefs and Breakwaters on Seagrass Growth. KATHARINE A. SMITH, ELIZABETH W. NORTH, FENGYAN SHI, SHIH-NAN CHEN, RALEIGH R. HOOD, EVAMARIA W. KOCH, AND ROGER I. E. NEWELL

758 Settlement and Recruitment Patterns of the Soft-Shell Clam, Mya arenaria, on the Northern Shore of the Bay of Fundy, Canada. JENNA E. BOWEN AND HEATHER L. HUNT

773 Oyster and Macroalgae Bioindicators Detect Elevated $\delta^{15}N$ in Maryland's Coastal Bays. B. FERTIG, T. J. B. CARRUTHERS, W. C. DENNISON, A. B. JONES, F. PANTUS, AND B. LONGSTAFF

787 The Effect of River Discharge and Winds on the Interannual Variability of the Pink Shrimp *Farfantepenaeus paulensis* Production in Patos Lagoon. OSMAR O. MÖLLER JR., JORGE PABLO CASTELLO, AND ANA CAROLINA VAZ

797 Effects of Life History Strategy on Fish Distribution and Use of Estuarine Salt Marsh and Shallow-Water Flat Habitats. DAVID L. MEYER AND MARTIN H. POSEY

NOTES

813 Recovery of Normal Cytogenetic Records in Mussels After Cessation of Pollutant Effluents in Puerto Madryn (Patagonia, Argentina). GONZALO MACHADO-SCHIAFFINO, LUIS O. BALA, AND EVA GARCIA-VAZQUEZ

819 Preliminary Examination of How Human-driven Freshwater Flow Alteration Affects Trophic Ecology of Juvenile Snook (*Centropomus undecimalis*) in Estuarine Creeks. AARON J. ADAMS, R. KIRBY WOLFE, AND CRAIG A. LAYMAN

Estuaries and Coasts

Volume 32 September 2009 Number 5

Contents

829 Iron Budget and Its Correlations with Macronutrients in the Inshore Waters of the Aegean Sea. KEMAL C. BIZSEL, MURAT V. ARDELAN, AND NIHAYET BIZSEL

844 Phosphorus Sorption Dynamics of Hawaii's Coastal Wetlands. Gregory L. Bruland and Gwen DeMent

855 Stratigraphic and Ecophysical Characterizations of Salt Pools: Dynamic Landforms of the Webhannet Salt Marsh, Wells, ME, USA. KRISTIN R. WILSON, JOSEPH T. KELLEY, ARIE CROITORU, MICHELE DIONNE, DANIEL F. BELKNAP, AND ROBERT STENECK

871 Peat Accretion Histories During the Past 6,000 Years in Marshes of the Sacramento–San Joaquin Delta, CA, USA. JUDITH Z. DREXLER, CHRISTIAN S. DE FONTAINE, AND THOMAS A. BROWN

893 Green Crab Larval Retention in Willapa Bay, Washington: An Intensive Lagrangian Modeling Approach. NEIL S. BANAS, P. SEAN MCDONALD, AND DAVID A. ARMSTRONG

906 Spatial and Seasonal Patterns of Salinity in a Large and Shallow Tropical Estuary of the Western Caribbean. LAURA CARRILLO, EMILIO PALACIOS-HERNÁNDEZ, MARIO YESCAS, AND ANA MARÍA RAMÍREZ-MANGUILAR

917 Salt Spray Induces Osmotic Adjustment and Tissue Rigidity in Smooth Cordgrass, Spartina alterniflora (Loisel.). BRANT W. TOUCHETTE, KIRSTEN L. RHODES, GRACEN A. SMITH, AND MARIANA POOLE

926 Responses of Avicennia germinans (Black Mangrove) and the Soil Microbial Community to Nitrogen Addition in a Hypersaline Wetland. DENNIS F. WHIGHAM, JOS T. A. VERHOEVEN, VLADIMIR SAMARKIN, AND PATRICK J. MEGONIGAL

937 Abiotic Factors Influencing the Distribution of Vegetation in Coastal Estuary of the Liaohe Delta, Northeast China. YUHE JI, GUANGSHENG ZHOU, AND THOMAS NEW

943 Cell-Specific Alkaline Phosphatase Expression by Phytoplankton from Winyah Bay, South Carolina, USA. MELISSA L. RANHOFER, EVELYN LAWRENZ, JAMES L. PINCKNEY, CLAUDIA R. BENITEZ-NELSON, AND TAMMI L. RICHARDSON

958 Nutrient Limitation on Phytoplankton Growth in the Upper Barataria Basin, Louisiana: MICROCOSM BIOASSAYS. LING REN, NANCY N. RABALAIS, R. EUGENE TURNER, WENDY MORRISON, AND WARREN MENDENHALL

975 Seasonal Composition of Benthic Macroinfauna Exposed to Hypoxia in the Northern Gulf of Mexico. MELISSA M. BAUSTIAN AND NANCY N. RABALAIS

984 The Role of Marsh-Derived Macrodetritus to the Food Webs of Juvenile Chinook Salmon in a Large Altered Estuary. GREER O. MAIER AND CHARLES A. SIMENSTAD

999 Combining Organic Matter Source and Relative Trophic Position Determinations to Explore Trophic Structure. RACHEL MARIE WILSON, JEFFREY CHANTON, GRAHAM LEWIS, AND DOUGLAS NOWACEK

1011 Essential Fish Habitat and Wetland Restoration Success: A Tier III Approach to the Biochemical Condition of Common Mummichog *Fundulus heteroclitus* in Common Reed *Phragmites australis*- and Smooth Cordgrass *Spartina alterniflora*-Dominated Salt Marshes. MICHAEL P. WEINSTEIN, STEVEN Y. LITVIN, AND VINCENT G. GUIDA

Estuaries and Coasts

Volume 32 November 2009 Number 6

Contents

REVIEW PAPER

1023 A Biogeochemical View of Estuarine Eutrophication: Seasonal and Spatial Trends and Correlations in the Delaware Estuary. JONATHAN H. SHARP, KOHEI YOSHIYAMA, ALEXANDER E. PARKER, MATTHEW C. SCHWARTZ, SUSAN E. CURLESS, ALLISON Y. BEAUREGARD, JUSTIN E. OSSOLINSKI, AND ALLEN R. DAVIS

PERSPECTIVES

1044 The Road Ahead: The Sustainability Transition and Coastal Research. MICHAEL P. WEINSTEIN

1054 Doubt and the Values of an Ignorance-Based World View for Restoration: Coastal Louisiana Wetlands. R. EUGENE TURNER

ORIGINAL PAPERS

1069 Teaching Estuarine Hydrology with Online Data. DAVID H. SCHOELLHAMER

1079 Trends in Abundance of Coastal Birds and Human Activity on a Texas Barrier Island Over Three Decades. CHARLES R. FOSTER, ANTHONY F. AMOS, AND LEE A. FUIMAN

1090 Modeling Bedload Transport of Juvenile Bivalves: Predicted Changes in Distribution and Scale of Postlarval Dispersal. HEATHER L. HUNT, DAVID C. FUGATE, AND ROBERT J. CHANT

1103 Contribution of a Dense Population of the Brittle Star Acrocnida brachiata (Montagu) to the Biogeochemical Fluxes of CO2 in a Temperate Coastal Ecosystem. DOMINIQUE DAVOULT, JÉRÔME HARLAY, AND FRANCK GENTIL

1111 Likely Population-Level Effects of Contaminants on a Resident Estuarine Fish Species: Comparing Gillichthys mirabilis Population Static Measurements and Vital Rates in San Francisco and Tomales Bays. CATHERINE R. MCGOURTY, JAMES A. HOBBS, WILLIAM A. BENNETT, PETER G. GREEN, HYUN-MIN HWANG, NAOAKI IKEMIYAGI, LEVI LEWIS, AND JASON M. COPE

1121 Remote Sensing of Biologically Reworked Sediments: A Laboratory Experiment. ANNELIES DE BACKER, STEFANIE ADAM, JAAK MONBALIU, ERIK TOORMAN, MAGDA VINCX, AND STEVEN DEGRAER

1130 Episodic and Long-Term Sediment Transport Capacity in The Hudson River Estuary. DAVID K. RALSTON AND W. ROCKWELL GEYER

1152 Stable Isotopes Reveal Complex Changes in Trophic Relationships Following Nutrient Addition in a Coastal Marine Ecosystem. ANNA R. ARMITAGE AND JAMES W. FOURQUREAN

1165 Enhanced Benthic Nutrient Flux During Monsoon Periods in a Coastal Lake Formed by Tideland Reclamation. SEOK-HWI KIM, KANGJOO KIM, MINHYUNG LEE, HWA-JIN JEONG, WON-JANG KIM, JONG-GYU PARK, AND JAE-SAM YANG

1176 Comparison of Nutrient and Microbial Dynamics over a Seasonal Cycle in a Mid-Atlantic Coastal Lagoon Prone to Aureococcus anophagefferens (Brown Tide) Blooms. MARGARET R. MILHOLLAND, GEORGE E. BONEILLO, PETER W. BERNHARDT, AND ELIZABETH C. MINOR

1195 Differences in the Soluble, Residual Phosphate Concentrations at Which Coastal Phytoplankton Species Up-regulate Alkaline-Phosphatase Expression, as Measured By Flow-Cytometric Detection of ELF-97® Fluorescence. SHANNON L. MESECK, JENNIFER H. ALIX, GARY H. WIKFORS, AND J. EVAN WARD

1205 Phytoplankton as an Indicator of Improving Water Quality in the Golden Horn Estuary. SEYFETTIN TAS, I. NOYAN YILMAZ, AND ERDOGAN OKUS

NOTE

1225 Dinoflagellate Cysts in Coastal Sediments as Indicators of Eutrophication: A Case of Gwangyang Bay, South Sea of Korea. SO-YOUNG KIM, CHANG-HO MOON, HYUN-JIN CHO, AND DHONG-IL LIM